

in 2001 to 19 in 2012 ( $p < 0.01$ ,  $R^2 = 0.99$ ). The average length of patient stay has decreased from 9.1 days in 2001 to 4.8 days in 2012 ( $p < 0.01$ ,  $R^2 = 0.77$ ). **Conclusions:** Local resourcing problems are evident, which is representative of wider resource limitations within the NHS. With financial and bed pressures increasing on the background of increasing referrals and acceptances, patients spend less time on the unit than before. The presentation outlines different ways in which we have adapted to bed pressures to treat patients more efficiently. Whether this is influencing patient outcomes prescribes further research.

#### 1280: CIDER: IMPROVING DATA COLLECTION IN TRAUMATIC BRAIN INJURY RESEARCH

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**Introduction:** Traumatic brain injury (TBI) comprises several pathological entities including extra-axial haematomas, parenchymal contusions and traumatic axonal injury. Prognostic factors influencing neurological outcome remain elusive. The heterogeneous nature of TBI makes correlation of radiological findings with clinical outcomes challenging. The National Institute of Neurological Disorders and Stroke (NINDS) have recommended a set of Common Data Elements (CDEs) for data collection in TBI research.

**Methods:** We have produced an iPad-compatible Graphic User Interface (GUI) to enter magnetic resonance imaging (MRI) findings into our TBI research database. Cambridge Imaging Data Entry Resources (CIDER) allows the user to enter details of patients and clinical or research MRI sequences that they have undergone. The user can then use the touch screen to identify the locations of discrete traumatic lesions as well as entering data concerning midline shift, compression of CSF spaces, traumatic sub-arachnoid haemorrhage and vascular injuries.

**Results:** We tested the software on academic clinicians from neurosurgical and neuro-intensive care backgrounds. We present the software and the outcomes of our end-user testing.

**Conclusions:** Our hope is that by standardising the collection of imaging data in traumatic brain injury across multiple institutions, we can learn more about the potential prognostic benefit of MRI in this devastating condition.

### Orthopaedics

#### 0050: ARE THEY GETTING FATTER? THE CHANGING DEMOGRAPHICS OF TOTAL KNEE ARTHROPLASTY

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**Introduction:** Knee osteoarthritis (OA) is of rising prevalence in the UK, due to advancing patient age and increasing population obesity. Demand for total knee arthroplasty (TKA) has increased in recent years, although there is limited research into epidemiological trends for this subgroup.

**Methods:** Our objective was to identify trends in TKA techniques and patient demographics by retrospective comparison between two patient cohorts: the first consisting of 686 patients operated on between 1994–1998 and the second consisting of 1408 patients operated on between 2009–2012.

**Results:** Both mean BMI and the proportion of obese patients ( $\text{BMI} > 30 \text{ kg/m}^2$ ) were found to be higher in group two ( $p < 0.01$ ). Although mean age was higher in group two, greater proportions of both 'young' ( $< 60$  years) and 'old' ( $> 80$  years) patients were found ( $p < 0.01$ ). Mean pain/function components of the American Knee Society Score (AKSS) were worse in group one ( $p < 0.01$ ), indicating that modern patients are being operated upon at lower thresholds. The frequency of both bilateral operation and blood transfusion were lower in group two ( $p < 0.01$ ).

**Conclusions:** These findings substantiate associations between the rising prevalence of knee OA risk factors and increasing demand for TKA. They also emphasize the need to shift focus towards preventative measures in the management of knee OA.

#### 0054: THE INFLUENCE OF CLOSING WEDGE ANGLE SELECTION ON LEG LENGTH SHORTENING IN PROXIMAL FEMORAL VARUS OSTEOTOMY

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**Introduction:** Proximal femoral varus osteotomy improves biomechanics and can stimulate normal acetabular development in a dysplastic hip. Medial closing wedge osteotomy is most common, however inherently shortens the ipsilateral femur. We produced a trigonometric model based

on the Tanget function to pre-operatively predict femoral shortening accounting for patient age and planned varus correction.

**Methods:** Radiological retrospective review of 135 patients over a 15 year period (1998–2013), examining the influence of closing wedge angle selection on leg length shortening. Patients were divided into 3 age groups: paediatric ( $< 10$  years), adolescent (10–16 years) and adult ( $> 16$  years).

**Results:** Geometric results indicated that for each  $10^\circ$  of wedge resection; resultant femoral shortening approximately equates to multiples of 4mm, 8mm and 12mm for the respective age groups. Pearson correlation coefficient for mathematically predicted versus clinically observed shortening when using a  $10^\circ$  or  $20^\circ$  wedge revealed a positive value of 0.93 ( $P < 0.001$ ). The 95% limits of agreement from the Bland and Altman statistical analysis were  $-3.5 \text{ mm}$  to  $+3.3 \text{ mm}$ .

**Conclusions:** 10mm of length discrepancy is clinically acceptable and up to 20mm is tolerable. This study proves that the geometric model devised provides satisfactory accuracy for this formula to be used in clinical practice.

#### 0104: TWO CONSULTANT OPERATING: THE PERCEIVED BENEFITS

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**Introduction:** There have been few detailed reports concerning two consultants operating together for complex spine surgery (e.g. Scoliosis). The purpose of this study is to analyse the perceived benefits for patients and surgeons if two consultants operate on complex spinal cases.

**Methods:** A five question survey related to the perceived benefits of joint consultant operating was conducted and sent to 300 spinal consultants in the UK. There were 105 responses.

**Results:** Our survey demonstrated that 93.88% had been involved in joint consultant operating and 92.93% feel that joint operating is beneficial. It was found that the more complex and less preformed cases were favoured for joint consultant surgery. The perceived benefits for the patient include shorter surgery time, less blood loss and fewer post-operative complications. The perceived benefits for the surgeon include being less stressful with shared responsibility and experience.

**Conclusions:** The survey analysis indicated that joint consultant operating is beneficial for the patient and the surgeon. As a result further data analysis comparing two consultants operating with one consultant operating will be carried out in the future.

#### 0105: A 10 YEAR REVIEW OF UNSTABLE THORACOLUMBAR SPINAL FRACTURES FROM NORTHERN IRELAND: THE ASSOCIATED INJURIES

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**Introduction:** Thoracolumbar spinal fractures managed with surgical stabilisation are often associated with other significant injuries. The aim of this study was to determine the incidence of associated injuries in these patients.

**Methods:** 481 patients with thoracolumbar fractures underwent surgical stabilisation in our national unit over a 10-year period. A sample of 210 cases from this group was identified and all early imaging was retrospectively reviewed. Injury mechanism and all additional injuries were recorded.

**Results:** 80 patients (38%) had an associated injury. 20 patients had 2 additional injuries and 14 patients had 3 or more. Additional spinal injury was the most frequent injury (17%) along with orthopaedic (17%), followed by thoracic (16%), abdominal (6%), facial (2%) and neurological (2%). Of those with thoracic injuries, 23 patients (11% of all thoracolumbar fractures requiring stabilisation) had rib fractures and 13 (6%) patients had haemo/pneumothorax. The majority of these injuries occurred through road traffic collisions and falls from height.

**Conclusions:** This study demonstrates the high frequency of associated injuries in patients with unstable thoracolumbar spine fractures. A high index of suspicion is required in the assessment of these patients and a multispecialty approach is required in their management.

#### 0153: IMPLANT REMOVAL FOLLOWING INTERNAL FIXATION OF DISTAL RADIUS FRACTURES: A NATIONAL SURVEY OF THE COMMON HARDWARE REQUIREMENTS AND DEVELOPMENT OF A UNIVERSAL PLATE REMOVAL KIT

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